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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,303	05/19/2006	Roy Knechtel	60291.000048	7114
21967 7590 07/15/2010 HUNTON & WILLIAMS LLP INTELLECTUAL PROPERTY DEPARTMENT 1900 K STREET, N.W. SUITE 1200 WASHINGTON, DC 20006-1109				
EXAMINER				
PARENDO, KEVIN A				
ART UNIT		PAPER NUMBER		
2823				
MAIL DATE		DELIVERY MODE		
07/15/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/595,303

Applicant(s)

KNECHTEL, ROY

Examiner

KEVIN PARENDO

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 11-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 5/7/10 and 3/31/10.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 3/31/10, 5/7/10, and 5/9/10 have been entered.

Claim Objections

2. Claim 1 is objected to because it contains the limitation "processed semiconductor wafers" on line 2. This limitation has been claimed previously to this instance and thus lacks proper antecedent basis. It is recommended as the easiest solution to delete the limitation "for connecting processed semiconductor wafers" from the preamble on line 1.
3. Claim 1 is objected to because the limitation "mid position" on line 2 should be "middle position" for grammatical correctness.
4. Claim 1 is objected to because the limitation "joining the at least two processed semiconductor wafers at a processing temperature of the electrically non-conducting glass paste and the electrically conducting glass paste" is misleading and confusing.

This implies a single temperature for both pastes, while it is apparent that the intent is to claim multiple situations (i.e. claim 4 has a situation where each paste has the same temperature, while claim 5 has the situation where each paste has a different temperature). To rectify this, it is recommended to amend this limitation to "joining the at least two processed semiconductor wafers at a first processing temperature of the electrically non-conducting glass paste and at a second processing temperature of the electrically conducting glass paste". This would thus require changing **claim 4** to "the process according to claim 1, wherein the first processing temperature and the second processing temperature are equal" for proper antecedent basis. This would also require changing **claim 5** to "the process according to claim 1, wherein the first processing temperature and the second processing temperature are different, and wherein the first processing temperature and the second processing temperature are successively passed in the joining of the at least two processed semiconductor wafers".

5. Claim 3 is objected to because the limitation "the conditioning process" on line 3 and the limitation "the premelting process" on lines 3-4 lack proper antecedent basis. The limitation is recited as "conditioning and premelting" in claim 1, so claim 3 should be amended to recite "the conditioning and the premelting" instead of "the conditioning process and the premelting process".

6. Claim 5 is objected to because the limitation "the process for connecting the at least two processed semiconductor wafers" on lines 3-4 lacks proper antecedent basis. The limitation is recited as "joining the at least two processed semiconductor wafers" in

claim 1, so the limitation in claim 5 should be changed to "the joining of the at least two processed semiconductor wafers". This change is already noted above in the discussion of claim 1.

7. Claim 5 is objected to because the limitation "non-conductive" on lines 1-2 lacks proper antecedent basis. Also, "processing temperatures" and "the processing temperatures" are confusing given the limitation "a processing temperature" discussed in claim 1. These issues will be moot if the change discussed with claim 1, above, is made.

8. Claim 8 is objected to because the limitation "wherein joining the at least two processed semiconductor wafers by the electrically non-conducting glass paste and the electrically conducting glass pastes takes place at a processing temperature" lacks proper antecedent basis throughout and is confusing. "Joining" lacks proper antecedent basis because it has already been recited in claim 1. The phrase "by the electrically non-conducting glass paste and the electrically conducting glass pastes" is redundant at best. The word "pastes" has the wrong plurality. The phrase "a processing temperature" lacks proper antecedent basis because this has already been recited in claim 1. As noted in the discussion of claim 1, it is unclear whether this really requires a single processing temperature or two processing temperatures.

It is thus recommended to change this limitation to "wherein the joining of the at least two processed semiconductor wafers further comprises the first processing temperature and the second processing temperature being [in a range of 450°C]".

Note, the term in brackets is responsible for a 112 rejection, as discussed below. It is up to the applicants to decide what to do to overcome that rejection.

9. Claim 21 is objected to because it is confusing due to poor grammar. The limitation "applying first patterned layer" on line 1 should be amended to "the applying of the patterned layers comprises applying a first patterned layer". The limitation "one" on line 2 should be amended to "a first one". The word "applying" should be inserted before "a second" on line 3. The limitation "of other of" on line 4 should be changed to "of a second one of".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-9 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "conditioning and premelting of the electrically non-conducting glass paste and the electrically conducting glass paste" on lines 10-11.

The metes and bounds of the claimed limitation can not be determined for the following reasons: neither this claim, nor any dependent claim therefrom, nor the specification, describes in clear detail what "conditioning" refers to. The specification discusses "conditioning" only in paragraphs 19, 29, and 31 of the published application,

and does not elaborate other than describing that it is done "in the customary extent and the customary processes". This term is so vague (it is defined by Merriam Webster Dictionary as "to put into a proper state for work or use") that one of ordinary skill in the art would not understand, exactly, the scope of the invention. There are multiple possibilities of what "conditioning" may refer to: (1) forming the glass paste into a specific shape in a specific location; (2) mixing a glass frit with a solvent to form the glass paste, as discussed in Ristic; and (3) stirring the glass paste after it has been formed so that its constituent solvent and glass particles are well mixed. There are even other possibilities the examiner can imagine ("silver paint" pastes often involve pumping the paste in a vacuum to rid the paste of dissolved air particles, so that they do not form voids when the paste is applied; it is possible that Ristic's conductive frit that has silver adhesive would be similarly conditioned).

If the language of a claim, considered as a whole in light of the specification and given its broadest reasonable interpretation, is such that a person of ordinary skill in the relevant art would read it with more than one reasonable interpretation, then a rejection of the claims under 35 U.S.C. 112, second paragraph, is appropriate. See MPEP 2173.05(a), MPEP 2143.03(I), and MPEP 2173.06. Thus, because this term is not specific and is not defined or discussed in the specification, it is completely necessary for the examiner or a person of ordinary skill in the art to imagine what might be intended by "conditioning", and thus the scope of the claim is unclear.

Claim 1 recites the limitation "conditioning and premelting of the electrically non-conducting glass paste and the electrically conducting glass paste" on lines 10-11.

The metes and bounds of the claimed limitation can not be determined for the following reasons: neither this claim, nor any dependent claim therefrom, nor the specification, describes in clear detail what "premelting" refers to. Because there is no standard definition for "premelting" or "premelting" (for instance, it is not defined by Merriam Webster Dictionary or the Academic Press Dictionary of Science and Technology), one must attempt to guess as to what is meant. Because "pre" means before, the examiner can guess two possibilities: (1) a melting that occurs before some other event; (2) an event related to a melting process that occurs before melting. The specification only discusses the "premelting" in paragraphs 17, 18, 29, and 31, and none of these discusses what is meant by premelting or what occurs during this process.

If the language of a claim, considered as a whole in light of the specification and given its broadest reasonable interpretation, is such that a person of ordinary skill in the relevant art would read it with more than one reasonable interpretation, then a rejection of the claims under 35 U.S.C. 112, second paragraph, is appropriate. See MPEP 2173.05(a), MPEP 2143.03(I), and MPEP 2173.06. Thus, because this term is not specific and is not defined or discussed in the specification, it is completely necessary for the examiner or a person of ordinary skill in the art to imagine what might be intended by "premelting", and thus the scope of the claim is unclear.

Claims 2-9 and 21 depend from claim 1 and inherit this deficiency.

11. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "in a range of 450°C" on line 4. The metes and bounds of the claimed limitation can not be determined for the following reasons: the limitation does not define the limits on what temperatures are covered by "a range of 450°C". First, the most appropriate definition of "range" according to the online Merriam Webster Dictionary is "a: a sequence, series, or scale between limits; b: the limits of a series: the distance or extent between possible extremes". In each of these, it is stressed that a range is defined according to the limits of that range. The claim does not require limits of the range, and uses the word range incorrectly as a relative term (see MPEP 2173.05(b)) having a meaning that is perhaps synonymous with "about". For instance, the claim does not require "in the range from 440 to 460 degrees", which would have a definite scope. Thus, it is unclear how close to 450 degrees is required. The examiner imagines that 445 degrees is acceptable, but wonders about 425, 400, 350, 300, or even 200 degrees. The claim gives no guidelines for such determination. Furthermore, the specification does not give any guidance to the scope of this range, either. The closest it comes is in paragraph 18 of the published application, which uses the same language of the claim. In no instance is it discussed how close the temperature must be to 450. The specification does not even discuss other possible temperatures.

In light of the aforementioned rejections of the claim(s) under 35 U.S.C. 112, the subsequent rejections under 35 U.S.C. 102 and/or 103 are based on prior art that reads on the interpretation of the claim language of the instant application as best understood by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The examination guidelines for determining obviousness under 35 U.S.C. 103 are described in MPEP 2141-2145.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 1-8, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,094,969 ("Warren") in view of US 5,545,912 ("Ristic") and US 6,817,917 B1 ("Kado").

Re claim 1, Warren discloses a process for connecting processed semiconductor wafers, wherein at least two processed semiconductor wafers (both **10**'s, see Fig. 2) are located in a mid position of a stack of wafers (the stack consists of both **10**'s and **28**'s, see Fig. 2), and wherein in an operation of a mechanical connecting, electrically insulating connections **24** (column 2, line 68 – column 3, line 3; column 3, lines 63-65; and Figs. 1-2) and electrically conductive connections **25** (column 3, lines 21-24 and 62-63 and Figs. 1-2) are produced between said at least two processed semiconductor wafers each one thereof having a wafer surface side to be connected, said process comprising:

- applying patterned layers (each of **24** and **25** is patterned to cover specific elements, see column 3, lines 1-3, 9, 21, and 39) of an electrically non-conducting paste **24** (column 2, line 68 – column 3, line 1; this is called a "glass frit", which is synonymous with "glass paste" because glass frit are the glass particles which, when screen printed, are dispersed in a solvent, thus being considered equivalent to a "paste"; for support for this statement, see Ristic, column 2, lines 23-32) and an electrically conducting glass paste **25** (column 3, lines 21-24; also called a "glass frit") on said wafer surface sides (see Fig. 2);
- geometrical alignment of the at least two processed semiconductor wafers to be connected (they are aligned so that the electrical contacts between wafers through the electrically conductive glass exist, see column 3, lines 64-65);

- joining the at least two processed semiconductor wafers at a processing temperature of the electrically non-conducting glass paste and the electrically conducting glass paste (they are joined at either 380 degrees or 480 degrees, depending on the specific glass frit used, see column 3, lines 43-49 and 60-65) using a mechanical pressure (they are “stacked upon each other to form a sandwiched construction”, see column 3, lines 50-52).

Warren does not disclose “processed semiconductor wafers” in the strict definition of wafer (being a semiconductor slab). Warren’s wafers are “multi-layered substrates” (column 1, line 15-16) being a ceramic circuit board (column 1, lines 44-46 and 58-60). However, it is well known to store ICs and other devices between processed semiconductor wafers.

For example, Ristic discloses (see Figs. 1-2) bonding semiconductor substrate **12** (column 2, lines 12-13) to semiconductor cap **16** (column 2, lines 15-16 and column 3, lines 21-24) using insulating or conducting glass frit **14** (column 2, lines 23-32 and column 3, lines 41-48) so that devices **26** (column 2, line 15) are enclosed in cavities **18** (column 2, line 14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the invention of Ristic to the invention of Warren. The motivation to do so is that the combination produces the predictable results of bonding not only ICs but other devices (such as 26), in a situation where conductive substrates (column 2, lines 12-13 and 15-16) may be joined so that electrical connections between them may be made (column 3, lines 18-14 and 44-48). This is useful for specific device types, such as accelerometers (column 3, line 64) or

transistors, resistors, capacitors, inductors, transducers, or surface acoustic wave devices (column 5, lines 30-32) that may require hermetic sealing (column 2, line 18) in a cavity to provide EMI shielding (column 5, lines 44-46).

Thus, herein, when "semiconductor wafers" is discussed in terms of Warren, it is to be understood that the semiconducting materials of Ristic are being substituted for the ceramic circuit boards. This avoids the need for repetition of the above paragraph.

Warren does not explicitly disclose "conditioning and premelting of the electrically non-conducting glass pastes and the electrically conducting glass paste". However, the examiner notes the rejection of the claims under the second paragraph of 112, above, for the ambiguity of the "conditioning" limitation. The examiner notes that the conditioning is disclosed by the Applicant to be "customary" (paragraph 19 of the published application). It is therefore an obvious condition for one of ordinary skill in the art to apply. Also, for example, the mixing of the glass frit and solvent together to form the paste (Ristic, column 2, lines 23-32) can be considered "conditioning". Warren's mixing in the silver adhesive (column 3, lines 17-20) only in the conducting paste may be interpreted as "conditioning" that is different than the "conditioning" of the non-conducting paste. Thus, the "conditioning" limitation would be obvious to one of ordinary skill in the art.

Regarding the "premelting", Kado discloses "pre-baking" glass frit at 350 degrees (column 7, lines 45-49 and column 16, lines 16-21). This is interpreted as "premelting" because it is a heating process conducted before the melting. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the

invention of Kado to the invention of Warren and Ristic. The motivation to do so is that the combination produces the predictable results of heating the glass paste so that resin and other materials are removed (column 7, lines 45-49 and column 16, lines 16-21).

Re claim 2, Warren further discloses that the electrically non-conducting glass paste and the electrically conducting glass paste are applied by a screen printing process (column 3, line 39).

Re claim 3, Warren and Ristic disclose the limitations of claim 1, as discussed above. Neither Warren or Ristic further discloses that the electrically non-conducting glass paste and the electrically conducting glass paste have different conditioning conditions and premelting conditions and, therefore, the conditioning process and the premelting process are implemented successively, each in a separate conditioning and premelting process.

The examiner notes the rejection of the claims under the second paragraph of 112, above, for the ambiguity of the "conditioning" limitation. The examiner notes that the conditioning is disclosed by the Applicant to be "customary" (paragraph 19 of the published application). It is therefore an obvious process for one of ordinary skill in the art to perform. For example, the mixing of the glass frit and solvent together to form the paste (Ristic, column 2, lines 23-32) can be considered "conditioning". And this, together with Warren's mixing in the silver adhesive (column 3, lines 17-20) only in the conducting paste may be interpreted as "conditioning" that is different than the "conditioning" of the non-conducting paste.

Regarding the "premelting", the examiner notes the ambiguity regarding this term, as discussed above with the 112 rejection. Kado discloses "pre-baking" glass frit at 350 degrees (column 7, lines 45-49 and column 16, lines 16-21). This is interpreted as "premelting" because it is a heating process conducted before the melting. It also appears to be a well known process that is part of a general "conditioning" that occurs while using glass pastes in the prior art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the invention of Kado to the invention of Warren and Ristic. The motivation to do so is that the combination produces the predictable results of heating the glass paste so that resin and other materials are removed (column 7, lines 45-49 and column 16, lines 16-21).

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to provide a process such that the electrically non-conducting glass paste and the electrically conducting glass paste have different conditioning conditions and premelting conditions (since Warren adds silver adhesive to the areas that are conductive, the conductive portion would have different physical properties and thus different conditioning and premelting properties) and, therefore, the conditioning process and the premelting process are implemented successively, each in a separate conditioning and premelting process (if they both have different conditions, it is necessary to perform them successively, because it would not be possible to perform them simultaneously).

Re claims 4 and 5, Warren does not disclose explicitly that

- that the electrically non-conducting glass paste and the electrically conducting glass paste have "substantially the same processing temperature" (claim 4); or that
- the electrically non-conducting glass paste and the electrically conducting glass paste have "different processing temperatures" and wherein the processing temperatures are successively passed in a-the process for connecting the at least two processed semiconductor wafers (claim 5).

Rather, Warren discloses that both **24** and **25** are heated to either 380 or 480 degrees, depending on which type of glass frit is used (see column 3, lines 44-47). Thus, both **24** and **25** are made of the same glass frit. They then have the same "processing temperature" if it is interpreted as the temperature at which both frits are heated to and that is sufficient to melt both frits. This thus renders claim 4 unpatentable.

The non-conductive frit is made to be conductive by adding silver/glass conducting adhesive (see column 3, lines 17-20) in specific areas where conductive frit is desired. If "processing temperature" is interpreted as a "melting temperature", then one of ordinary skill in the art at the time of invention would understand that since the frits began as the same, with the same melting temperature, that adding another adhesive composition to the frit to make it conductive would alter its physical properties including its melting temperature. Thus, they would have "different processing temperatures". Warren then heats to a higher processing temperature (e.g. 480) that is

sufficient to melt both frits. Warren thus would have to successively pass both melting temperatures by during the connecting/joining.

Re claim 6, Warren further discloses that at least one of the at least two processed semiconductor wafers has an electrical connection in an area that does not contain electronic structures (see column 3, lines 21-24, wherein the substrates are connected electrically, but not the ICs).

Re claim 7, Warren further discloses that the at least two processed semiconductor wafers are electrically connected at specific electric circuit points in areas containing electronic structures (see column 1, line 64 - column 2, line 5, wherein "the ICs may be electrically connected between the stacked boards").

Re claim 8, Warren further discloses that joining the at least two processed semiconductor wafers by the electrically non-conducting glass paste and the electrically conducting glass pastes takes place at a processing temperature in a range of 450°C (they are joined at either 380 degrees or 480 degrees, depending on the specific glass frit used, see column 3, lines 43-49 and 60-65).

Re claim 21, Warren further discloses applying first patterned layer of the electrically non-conducting glass paste to the wafer surface side of one of the at least two processed semiconductor wafers (see column 1, lines 63-65, wherein the non-conducting glass frit is formed to cover "each individual" wafer; see column 2, line 67 – column 3, line 3, wherein the ICs **20** may be covered, but only one of which is shown; thus, both sides of each **10** are covered with **24**) and a second patterned layer of the electrically conducting glass paste on the wafer surface side of other of the at least two

processed semiconductor wafers (when **25** is made to be conductive in some selected area, is necessarily is either on the top or bottom of a wafer **10**; thus, there will be **24** on one side of one wafer **10**, and there will be **25** on the opposite side of an adjacent wafer **10**).

13. Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Warren, Ristic, and Kado, as applied to claim 1, above, and further in view of US 2003/0170936 A1 ("Christensen").

Re claim 9, Warren, Ristic, and Kado disclose the limitations of claim 1, as discussed above, but fail to further disclose that one of the at least two processed semiconductor wafers is a SOI wafer comprising an active semiconductor layer and a buried oxide layer on a substrate and wherein an electrical connection to the substrate of the SOI wafer is implemented through previously produced openings in the buried oxide layer and in the active semiconductor layer.

Christensen discloses that one of the at least two processed semiconductor wafers is a SOI wafer (paragraph 2) comprising an active semiconductor layer and a buried oxide layer **106** or **108** (paragraph 20) on a substrate **104** (paragraph 20) and wherein an electrical connection to the substrate of the SOI wafer is implemented through previously produced openings **300** (Fig. 3 and paragraph 24) in the buried oxide layer **106** or **108** (Fig. 3) and in the active semiconductor layer **102** (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the invention of Christensen to the invention of Warren,

Ristic, and Kado. The motivation to do so is that the combination produces the predictable results of connecting a SOI wafer with improved speed of signals (paragraph 2) to an external wafer.

Response to Arguments

14. Applicant's arguments with respect to claims 1-9 and 21 have been considered but are moot in view of the new ground(s) of rejection. The examiner accepts the applicants' assertions that their "glass paste" is different than adhesives or underfill materials (see last paragraph of page 9 of remarks to first paragraph of page 11). The prior art (e.g. Ristic's discussion of the glass frit, referenced above) teaches glass frits or pastes having treatment temperatures of between 380 and 480 degrees, which are roughly the same as that disclosed by the applicant (450 degrees). Thus, "glass paste" is interpreted as being synonymous with "glass frit" and searches were conducted for those materials. Adhesives having a "glass transition temperature" are excluded, as the examiner agrees that one of ordinary skill in the art would take the disclosure and remarks of the applicant as precluding those materials. New rejections are necessitated by the amendments to the claims, as discussed above.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Parendo, whose can be contacted by phone at

(571) 270-5030 or directly by fax at (571) 270-6030. The examiner can normally be reached on Mon.-Thurs. and alternate Fridays from 7 a.m. - 4:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (571) 272-1907. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin A. Parendo/
Examiner, Art Unit 2823
7/15/2010